

**TECHNICAL REVIEW DOCUMENT**  
**For**  
**RENEWAL of OPERATING PERMIT 95OPWE057**

Kerr-McGee Gathering LLC – Hudson Compressor Station  
Weld County  
Source ID 123/0048

Prepared by Matthew S. Burgett  
September 2005, October 2005, December 2005 & June 2006

**I. Purpose:**

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued September 1, 1998, and expired on September 1, 2003. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted October 29, 2002, additional technical information submitted on January 15, 2003, June 11, 2003, July 11, 2003, December 18, 2003, April 30, 2004, April 25, 2005, July 25, 2005, November 22, 2004, December 1, 2005, January 12, 2006, & February 21, 2006, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

**II. Description of Source**

This source is classified as a natural gas gathering and compression facility defined under Standard Industrial Classification 1311. The facility consists of seven internal combustion engines for the compression and transmission of

natural gas and two triethylene glycol dehydration units to remove water from the natural gas. Three of the engines are equipped with non-selective catalytic reduction systems and the glycol dehydration units are connected to a single flare to reduce emissions. This facility has a condensate storage tank battery, which is controlled with a flare. Fugitive VOC emissions from equipment leaks are also a source of emissions at this facility.

The facility is located approximately 5 miles northeast of Hudson, a community of approximately 5,000 people, in Weld County (SW ¼ of the SW ¼ of Section 23, T3N R65W). This facility is situated in rolling hills and is surrounded by pastureland. The area in which the plant operates is designated as attainment for all criteria pollutants. This facility is located in the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.16. There are no affected states within 50 miles of the plant. The following Federal Class I designated areas are within 100 kilometers of the plant: Rocky Mountain National Park.

The source has requested to add an emergency generator engine to the insignificant activity list. Additionally, it should be noted that revisions were made to Colorado Regulation No. 3, regarding condensate storage tanks and condensate truck loading equipment and those revisions took effect on December 30, 2002. Previously, under Regulation No. 3, certain size condensate storage tanks and condensate truck loading equipment meeting a specified throughput limit were exempt from APEN reporting and permitting requirements and were considered insignificant activities for Title V operating permit purposes. With the revisions to Colorado Regulation No. 3, only condensate storage tanks and condensate loading equipment at exploration and production (E & P) sites meeting specified throughput limits are APEN exempt and insignificant activities. Kerr-McGee has submitted an APEN for the condensate storage tanks at the Hudson facility. Therefore, since these tanks are subject to APEN reporting requirements, the Division will include the condensate storage tanks in Section II of the renewal operating permit.

#### MACT Applicability

##### HHH – Natural Gas Transmission and Storage:

The Hudson facility is not a natural gas transmission and storage facility as described in 40 CFR Part 63 Subpart HHH, "National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage". The Hudson facility is an upstream natural gas production-related gathering and compression station and not subject to this MACT.

##### HH – Oil and Natural Gas Production Facilities:

The glycol dehydrator construction permits (95WE774 & 00WE0247) and renewal operating permit include HAP limits on the dehydrator in order to avoid applicability to the provision in 40 CFR Part 63 Subpart HH, "National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production

Facilities” (Oil and Natural Gas Production MACT). Under the provisions of the Oil and Natural Gas Production MACT, since the Hudson facility meets the definition of a “production field facility”, only HAP emissions from glycol dehydrators and storage vessels with the potential for flash emissions need to be aggregated to determine whether the facility is a major source for HAPS. The condensate tanks at the Hudson facility do not meet the definition of “storage vessels with the potential for flash emissions” since the actual annual average throughput is less than 500 bbl/day (79,500 l/day). Therefore, HAP limits were only necessary for the glycol dehydrators.

#### ZZZZ – Stationary Reciprocating Internal Combustion Engines:

Under the rules for reciprocating internal combustion engines, for production field facilities, only emissions from glycol dehydrators, storage vessel with the potential for flash emissions, reciprocating internal combustion engines and combustion turbines need to be aggregated to determine if the facility is a major source for HAPS. An analysis was conducted to determine HAP emissions from the equipment at this facility. Total HAP emissions, based on permitted production, were calculated to be greater than major source levels. Specifically, formaldehyde emissions exceed 10 tons per year. The engines at this facility are potentially subject to the RICE MACT. However, the Clark engines (P001-P004) are considered existing 2-stroke lean burn engines, which are not subject to the RICE MACT. The other three engines (P005-P007) are considered existing 4-stroke rich burn engines subject to the RICE MACT. This renewal permit will include the applicable requirements from Subpart ZZZZ. The draft permit will assume that Kerr McGee will comply with the option to reduce formaldehyde by 76 percent or more (instead of the concentration limit option). It should be noted that the compliance date for the existing engines subject to ZZZZ is June 15, 2007.

#### Compliance Assurance Monitoring (CAM) Applicability

The two triethylene glycol dehydrators are equipped with a common flare to control VOC and HAP emissions. The potential to emit of each dehydrator, without controls, exceeds major source levels and the dehydrators are subject to an annual VOC and HAP limit. A CAM plan was submitted for the glycol dehydrators and incorporated into the renewal permit.

The Caterpillar G399TA engine is equipped with NSCR for control of NO<sub>x</sub> and CO emissions. The potential to emit for NO<sub>x</sub> of the engine, without controls, exceeds major source levels and the engine is subject to an annual limit on NO<sub>x</sub> emissions. A CAM plan was submitted for the engine. This engine is also subject to the RICE MACT. The CAM plan indicator ranges will reference the operating limitations of the RICE MACT.

The Waukesha L7042GU is equipped with NSCR for control of NO<sub>x</sub> and CO emissions. The potential to emit for NO<sub>x</sub> of the engine, without controls, exceeds

major source levels and the engine is subject to an annual limit on NO<sub>x</sub> emissions. A CAM plan was submitted for the engine. This engine is also subject to the RICE MACT. The CAM plan indicator ranges will reference the operating limitations of the RICE MACT.

The condensate storage tank battery is equipped with a flare for control of VOC emissions. The potential to emit of the battery, without controls, exceeds major source levels and the storage tank battery is subject to an annual VOC limit. A CAM plan was submitted for the storage tank battery and incorporated into the renewal permit.

### Emissions

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit based on revisions to permitted emission limits, include the condensate storage tank and to update actual emissions. Emissions (in tons per year) at the facility are as follows:

Pollutant	Potential to Emit (TPY)	Actual Emissions (TPY)
NO <sub>x</sub>	1727.7	1192.5
CO	312.0	235.1
VOC	147.0	134.5
Total HAPS	>25	25.5

The PTE shown above is based on permit limitations. Actual criteria pollutant emissions from the engines, fugitive VOCs, dehydrator and condensate tanks are based on the most recent APENs submitted to the Division.

## **III. Discussion of Modifications Made**

### **Source Requested Modifications**

A renewal application was received on October 29, 2002. No changes were requested in the original renewal application other than a change to the facility contact person.

The Division received a request for changes to the Operating Permit on June 11, 2003. Kerr McGee requested cancellation of the Smart Ash incinerator (123/0048/020), and replacement of the flare attached to the dehydrator reboiler still column with a thermal oxidation unit. This replacement request was later cancelled via the April 30, 2004 letter. Kerr McGee wants to keep the flare as the control device and modify the supplemental fuel requirement from 2.8 mmbtu/hr to 0.728 mmbtu/hr as quantified in the worst-cast GlyCalc analysis for the two

dehydration units. Some permit conditions were also modified based on the submitted worst-case GlyCalc analysis.

Another modification request for the two glycol dehydration units was received on July 25, 2005. Kerr McGee requested permission to install a condenser on the two units and reduce the emission limits and supplemental fuel requirement for the flare. Revised worst-case GRI-GLYCalc runs were submitted with this request.

The July 25, 2005 application also contained a request to modify the Waukesha L7042GU engine. Kerr McGee requests an emission increase due to the installation of a turbocharger. Kerr McGee later requested (via comments on the draft permit) an AOS to allow them to operate the engine with or without the turbocharger.

The April 30, 2004 letter from Kerr McGee also informed the Division that the maximum horsepower of the four Clark engines is 3850 hp, not 3000 hp as previously listed. This change will not affect any permit limits, but will increase the PTE of these engines.

The Division also received a request for changes to the Operating Permit in a letter dated April 30, 2004. Kerr McGee requested that the component physical hard count be done annually as opposed to a running tally with the hard count conducted every five years. They also requested removal of the requirement to monitor, repair, and log all potential equipment leaks. This letter also contained a request to update the responsible official and facility contact person.

A December 17, 2003 letter from Kerr McGee requested an increase in the VOC emissions from the fugitive equipment leaks due to a revised component inventory.

In a separate April 30, 2004 letter, Kerr McGee requested to increase the permitted emissions from the Caterpillar G399TA engine (P006). The increase is requested due to an increase in the heat content of the gas from 925 btu/scf to 1060 btu/scf. An April 22, 2005 letter then requested a decrease in emissions from this engine due to the addition of NSCR control to the engine.

An APEN and application for a construction permit (03WE0065) was submitted for their condensate tanks on January 27, 2003. The Initial Approval construction permit was issued July 24, 2003, with Final Approval being issued April 30, 2004. The construction permit conditions will be included in this renewal permit as requested.

A modification request for the condensate tanks was submitted on November 22, 2004. Kerr McGee requested an increase in condensate throughput and

emissions. Originally requested as a construction permit modification (03WE0065), this request will be processed in this renewal Operating Permit.

Another modification request for the condensate tanks was received on January 12, 2006. This application requested an increase in condensate throughput limits and a change in emission limits for the tank battery and flare.

A July 11, 2003 letter requests the addition of an Volvo Penta, 464 hp engine for emergency generation to the insignificant activity list.

Kerr McGee sent in a name change request (received February 21, 2006) to change the name from Kerr McGee Rocky Mountain Corporation to Kerr McGee Gathering LLC. This request has been incorporated into the renewal permit.

**Therefore, all of the source's requested modifications were addressed in the renewal application as follows:**

Page following cover page

The responsible official and facility contact person were updated.

Smart Ash Incinerator

This unit was removed from the permit as requested.

Glycol dehydration units

The April 30, 2004 letter from Kerr McGee requested cancellation of the previous request to replace the flare with a thermal oxidizer. The flare will remain as the common control device for the two glycol dehydration units. Kerr McGee also requested to change the supplemental fuel requirement for the flare from 2.8 mmbtu/hr to 0.728 mmbtu/hr. This change is based on the worst-case GRI-GLYCalc emission calculations performed April 29, 2004.

The July 11, 2005 application from Kerr McGee requests addition of condensers onto the dehy units and a reduction in emission limits and supplemental fuel requirement for the flare. This change is based on the most recent worst-case GRI-GLYCalc emission calculations performed July 9, 2005. The Division has changed the supplemental fuel requirement in the renewal permit.

The Division has also modified some of the other glycol dehydration units permit conditions based on the July 9, 2005 worst-case GLYCalc analysis. The VOC emission limits have changed from 21.5 TPY (P010) to 9.0 TPY and 10.9 TPY

(P018) to 4.5 TPY. The BTEX content of the gas has been updated for both units based on this worst-case analysis as well.

The two sources must also ensure that they remain in compliance with the Regulation No. 7 requirements for VOC Emissions from Oil and Gas Operations.

#### Horsepower changes to the Clark Engines

The Hudson Compressor Station's Title V permit contains four Clark engines that are covered by construction permit 10WE1047. Kerr McGee informed the Division in an April 30, 2004 letter that these four engines should actually be rated at 3850 HP, not 3000 HP. 3850 HP is the peak horsepower and accounts for the maximum load at the coolest temperatures for these units. Kerr McGee stated that this change was not due to a modification, but that the HP had been incorrectly reported in the past. The Division will update the permit with the correct HP rating. This change will not affect permit limits, as these engines do not have specific emission limits or fuel use limits.

The Title V permitting section did not require an actual to potential test or other PSD review due to the change in HP mentioned above. The PTE for the engines will increase due to the change in HP. However, the NOx PTE is in excess of 250 TPY (per engine) when calculated using either 3000 HP or 3850 HP. The CO PTE is 55.8 TPY (per engine) at 3850 HP. These calculations reveal that the change in horsepower does not affect the PSD status of these engines.

#### Component count & equipment leaks

The permittee requested to conduct a component hard count on an annual basis instead of the previous method, which required a hard count every five years along with a running total of additions/subtractions. The Division will allow this annual hard count approach.

The April 30, 2004 letter contained a request to remove the requirement to monitor, repair and log all potential equipment leaks. The Division will remove this requirement. This requirement is not typically expected of sources unless they are subject to NSPS Subpart KKK.

The December 17, 2003 letter and APEN requested an increase in emissions from fugitive equipment leaks due to a recent component inventory. The Division has changed the permit emission limit from 13.1 TPY VOC to 20.9 TPY.

#### Caterpillar G399TA Engine (P006)

An April 30, 2004 letter requested to increase the pollutant emissions from this engine due to an increase in the heat content of the fuel from 925 btu/scf to 1060 btu/scf. In addition, an April 22, 2005 letter requests a reduction in emissions due to the installation of NSCR on the engine. The net result is a decrease in emissions from the engine. NO<sub>x</sub> has decreased from 86.9 TPY to 21.15 TPY, and CO has decreased from 71.4 TPY to 21.15 TPY. The Division has made these requested changes to the permit. These changes were not investigated for PSD concerns since the combination of the two changes results in a decrease in emissions for all pollutants.

#### Waukesha L7042GU Engine (P007)

The July 25, 2005 application contained a request to modify the Waukesha L7042GU engine. Kerr McGee requested an emission increase due to the installation of a turbocharger. Kerr McGee later requested (via comments on the draft permit) an AOS to allow them to operate the engine with or without the turbocharger. This request does not fit well with the Division's AOS structure, so the permit will be drafted with alternative limits and emission factors should the turbocharger not be installed within 18 months of the renewal permit issuance. Kerr McGee must use the appropriate limits and emission factors depending on turbocharger installation status.

#### Condensate Tanks – Construction Permit 03WE0065

With recent revisions to Regulation No. 3, condensate storage tanks are no longer considered insignificant activities if VOC emissions are above the APEN de minimis level. The source submitted an APEN on January 27, 2003 for the condensate storage tank battery indicating that uncontrolled VOC emissions are 140.0 tons/yr (7.0 TPY controlled). Since VOC emissions are above the APEN de minimis levels, the condensate storage tank battery can no longer be considered an insignificant activity and has been included in Section II of the operating permit. The source will be required to calculate emissions monthly using E & P Tanks Version 2.0. In order to estimate emissions, the source will be required to sample and analyze the condensate annually.

#### Insignificant Activities

A July 11, 2003 letter requests the addition of an Volvo Penta, 464 hp engine for emergency generation to the insignificant activity list. The list has been updated.



## **Other Modifications**

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal. These changes are as follows:

### **Page Following Cover Page**

It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

- Added language specifying that the semi-annual reports and compliance certifications are due in the Division's office and that postmarks cannot be used for purposes of determining the timely receipt of such reports/certifications.

### **Section I – General Activities and Summary**

- The permitted activities description and attainment status of Weld County was updated.
- Construction permit 03WE0065 was added to Condition 1.3.
- Conditions 13 and 17 in Condition 1.4 were renumbered to 14 and 18 and Condition 21 in Condition 1.5 was renumbered to 22. The renumbering changes were necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit.
- In Condition 1.4, General Condition 3.g (new general condition for general provisions) was added as State-only requirements.
- The language for the alternative operating scenario for temporary engine replacement was updated to reflect current language (6/1/2006 version).
- Minor language changes were made to Condition 3 to more appropriately reflect the status of the source with respect to PSD.

- Based on comments made by EPA on another operating permit, the phrase “Based on the information provided by the applicant” was added to the beginning of Condition 4.1 (112(r)).
- Added a “new” Section 5 for compliance assurance monitoring (CAM). The previous Section 5 section has been removed. This previous section contained a statement that this facility was exempt from 40 CFR Part 63, Subpart HH due to enforceable HAP limits. This statement is unnecessary in the permit and should be located in the TRD.
- The table in Section 6 has been updated to reflect current equipment and control devices.

## Section II – Specific Permit Terms

- The permit now includes requirements to comply with the most current Division-approved Operations & Maintenance Plan. Any plans received during review of the renewal permit will be routed to the field services unit for review after issuance of the renewal permit.
- Some of the engine opacity language has been changed to make it clear that natural gas is the only fuel allowed to be used.

### Section II.1 - Unit S001 – S004: Clark Engines

- The emission calculation was moved to Condition 1.1 from 1.2.
- The opacity language in Condition 1.3 was slightly modified to reflect current language.
- Added Condition 1.5 for the requirement to control emissions from stationary and portable engines in the 8-hour ozone control area. Kerr McGee submitted a request on 8/9/2005 for exemption from this requirement. The Division responded with an 8/29/2005 letter denying the request for exemption since it was submitted after the 5/1/2005 deadline.

### Section II.2 - Unit P005: Waukesha L-5108 Engine with NSCR

- Condition 2.1 was revised to reflect current language.
- Fuel limit was moved to Condition 2.2 with current language. A rolling 12 month total is now required.
- Opacity limit was moved to Condition 2.3 with current language.
- The portable monitoring language was moved to Condition 2.4 with the 6/1/2006 language.

- The requirement to measure BTU content semi-annually (twice per year) was moved to Condition 2.5 with current language.
- The hours of operation monitoring requirement was moved to Condition 2.6.
- Added a requirement to monitor the millivolt reading (AFR) as Condition 2.7.
- The Regulation No. 7 requirement for control of emissions from stationary and portable engines in the 8-hour ozone control area was added as Condition 2.8. The original Title V application had reported this engine as a 4-cycle lean burn. However, the RICE MACT Initial Notification dated October 29, 2004 identifies this engine as a 4-stroke rich burn engine. The regulation requires rich burn ICEs to install NSCR and an air fuel controller, which Kerr McGee has installed on this engine.
- This engine is subject to the RICE MACT (40 CFR part 63, Subpart ZZZZ) as identified in the October 29, 2004 initial notification submitted by Kerr McGee. This regulation requires Kerr McGee to reduce Formaldehyde emissions by 76 percent or more or to limit the concentration of Formaldehyde in the exhaust to 350 ppbvd or less at 15 percent O<sub>2</sub>. This renewal permit has included the RICE MACT provisions assuming that Kerr McGee will be complying with the requirement to reduce Formaldehyde emissions by 76 percent or more. An initial performance test will need to be conducted within 180 days after June 15, 2007. The various limits, testing, monitoring, recordkeeping and reporting requirements are outlined in Condition 2.10 and 2.11.
- CAM is not required since uncontrolled PTE is less than 100 TPY for all pollutants.

### Section II.3 - Unit P006: Caterpillar G399TA Engine with NSCR

- The engine's horsepower was corrected to 730 HP from 600 HP. 730 is listed as the engine HP on the engine detail sheet and the 4/21/2005 APEN submitted by Kerr McGee. An explanation why the HP has changed was not submitted. This change should not cause PSD concerns since the engine is now controlled with NSCR and all criteria emissions from this engine are below PSD significance levels.
- Condition 3.1 was revised to reflect current language and the new emission limits & compliance emission factors which are based on the current heat content of the fuel and use of NSCR for control of emissions.

- The fuel limit in Condition 3.2 was revised to reflect the new requested fuel use and incorporate current language including a rolling 12-month total requirement.
- Opacity limit was moved to Condition 3.3 with current language.
- The portable monitoring language was included as Condition 3.4 with the 6/1/2006 language.
- The requirement to measure BTU content semi-annually (twice per year) was moved to Condition 3.5 with current language.
- The hours of operation monitoring requirement was moved to Condition 3.6.
- Added a requirement to monitor the millivolt reading (AFR) as Condition 3.7.
- The Regulation No. 7 requirement for control of emissions from stationary and portable engines in the 8-hour ozone control area was added as Condition 3.12. The original Title V application had reported this engine as a 4-cycle lean burn. However, the RICE MACT Initial Notification dated October 29, 2004 identifies this engine as a 4-stroke rich burn engine. The regulation requires rich burn ICEs to install NSCR and an air fuel controller, which Kerr McGee has installed on this engine.
- This engine is subject to the RICE MACT (40 CFR part 63, Subpart ZZZZ) as identified in the October 29, 2004 initial notification submitted by Kerr McGee. This regulation requires Kerr McGee to reduce Formaldehyde emissions by 76 percent or more or to limit the concentration of Formaldehyde in the exhaust to 350 ppbvd or less at 15 percent O<sub>2</sub>. This renewal permit has included the RICE MACT provisions assuming that Kerr McGee will be complying with the requirement to reduce Formaldehyde emissions by 76 percent or more. An initial performance test will need to be conducted within 180 days after June 15, 2007. The various limits, testing, monitoring, recordkeeping and reporting requirements are outlined in Condition 3.10 and 3.11.
- Added the CAM requirements as Condition 3.9.

#### CAM Plan Review

Kerr McGee did not submit a CAM plan for this engine. The Division has drafted a CAM plan and will include it in the draft permit. Kerr McGee can comment on it during their review. This engine is also subject to the

RICE MACT. Since the MACT is considered presumptive CAM, the CAM plan will require compliance with the MACT. The MACT compliance date is June 15, 2007. The CAM plan will need to be effective upon issuance of the renewal permit. The CAM plan will require compliance with the operating limitations of the MACT upon issuance of the renewal.

The CAM plan will contain a requirement to maintain the exhaust gas temperature into the catalyst within a range of 750°F to 1250°F to be consistent with the RICE MACT. This temperature shall be monitored on a continuous basis.

Kerr McGee should monitor the pressure drop across the catalyst as required by the MACT. Kerr McGee should maintain a pressure drop across the catalyst such that it does not change by more than two inches of water from the pressure drop across the catalyst measured during the performance test. A performance test on the engine is required in the MACT and must be conducted within 180 days after June 15, 2007. The pressure drop shall be monitored on a monthly basis. Obviously Kerr McGee can't show compliance with this requirement until the performance test is conducted. Until that time, Kerr McGee shall monitor compliance by maintaining a pressure drop across the catalyst such that it does not change by more than two inches of water from the manufacturer's recommended pressure drop across the catalyst.

Kerr McGee did comment on the applicability of a CAM plan for this unit. They stated that CAM should not apply because an AFR controller was installed with the NSCR. This AFR controller does not physically remove contaminants and emissions after the AFR controller do not exceed major source levels (prior to the NSCR). The AFR controller was installed at the same time as the NSCR. The Division views the AFR controller as part of the control device and will require CAM.

#### Section II.4 - Unit P007: Waukesha L7042GU Engine with NSCR

- Condition 4.1 was revised to reflect current language and the use of alternate limits based on turbocharger installation.
- The fuel limit was moved to Condition 4.2 and revised to reflect current language and the use of alternate limits based on turbocharger installation.
- Opacity limit was moved to Condition 4.3 with current language.
- The portable monitoring language was included as Condition 4.4 with the 6/1/2006 language.

- The requirement to measure BTU content semi-annually (twice per year) was moved to Condition 4.5 with current language.
- The hours of operation monitoring requirement was moved to Condition 4.6.
- Added a requirement to monitor the millivolt reading (AFR) as Condition 4.7.
- The Regulation No. 7 requirement for control of emissions from stationary and portable engines in the 8-hour ozone control area was added as Condition 4.8. The RICE MACT Initial Notification dated October 29, 2004 identifies this engine as a 4-stroke rich burn engine. The regulation requires rich burn ICEs to install NSCR and an air fuel controller, which Kerr McGee has installed on this engine.
- This engine is subject to the RICE MACT (40 CFR part 63, Subpart ZZZZ) as identified in the October 29, 2004 initial notification submitted by Kerr McGee. This regulation requires Kerr McGee to reduce Formaldehyde emissions by 76 percent or more or to limit the concentration of Formaldehyde in the exhaust to 350 ppbvd or less at 15 percent O<sub>2</sub>. This renewal permit has included the RICE MACT provisions assuming that Kerr McGee will be complying with the requirement to reduce Formaldehyde emissions by 76 percent or more. An initial performance test will need to be conducted within 180 days after June 15, 2007. The various limits, testing, monitoring, recordkeeping and reporting requirements are outlined in Condition 4.9 and 4.10.
- Added CAM requirements as Condition 4.12

#### CAM Plan Review

Kerr McGee submitted a CAM plan for this engine with the comments on the draft renewal permit. The Division has drafted a CAM plan and will include it in the draft permit. This engine is also subject to the RICE MACT. Since the MACT is considered presumptive CAM, the CAM plan will require compliance with the MACT. The MACT compliance date is June 15, 2007. The CAM plan will need to be effective upon issuance of the renewal permit. The CAM plan will require compliance with the operating limitations of the MACT upon issuance of the renewal.

The CAM plan will contain a requirement to maintain the exhaust gas temperature into the catalyst within a range of 750°F to 1250°F to be consistent with the RICE MACT. This temperature shall be monitored on a continuous basis.

Kerr McGee should monitor the pressure drop across the catalyst as required by the MACT. Kerr McGee should maintain a pressure drop across the catalyst such that it does not change by more than two inches of water from the pressure drop across the catalyst measured during the performance test. A performance test on the engine is required in the MACT and must be conducted within 180 days after June 15, 2007. The pressure drop shall be monitored on a monthly basis. Obviously Kerr McGee can't show compliance with this requirement until the performance test is conducted. Until that time, Kerr McGee shall monitor compliance by maintaining a pressure drop across the catalyst such that it does not change by more than two inches of water from the manufacturer's recommended pressure drop across the catalyst.

Section II.5 - Unit P010: Q.B. Johnson triethylene glycol dehydrator with flare

- This whole section has been restructured to match current formatting and language.
- Condition 5.1 was drafted based on the 7/9/2005 worst-case emission calculations submitted by Kerr McGee. The VOC limit has been reduced from 21.5 TPY to 9.0 TPY. The Division has removed the monthly emission limit since this only applied during the first 12 months of operation and no longer applies. The HAP limits have been reduced to 8 TPY for each individual HAP and 20 TPY for total HAPs. This is consistent with the current Division HAP limit policy. The hourly VOC & HAP emission rate has been updated in Condition 5.1.4 based on the worst-case emission calculations.
- The gas analysis frequency has been drafted to allow for less frequent analysis if BTEX concentrations remain below the requested values (Condition 5.1.2). The previous permit required quarterly analysis.
- The inlet gas pressure and flash tank temperature and pressure no longer require monitoring.
- The monthly gas throughput limit has been removed from Condition 5.2. This limit only applied during the first 12 months of operation.
- The Division removed the requirement to limit the lean glycol flow rate below 17.9 gallons per minute (Condition 5.3 of previous permit). The lean glycol flow rate is already recorded on a daily basis in Condition 5.1. If the average glycol circulation rate of 17.9 gallons per minute is exceeded, a GLYCalc run is required to determine emissions.
- Condition 5.3 was added to record the hours/days of operation for use in any required GLYCalc run.

- Condition 5.6 from the previous permit has been removed. This condition explained how to demonstrate compliance with the 99% flare control efficiency. This condition is not necessary since the CAM plan will be used to determine compliance with the control efficiency.
- Condition 5.10 of the previous permit has been removed. This self-certification requirement from the construction permit is not needed anymore.
- The opacity condition (5.6) has been redrafted to reflect current language for flares.
- Added Condition 5.8 for the requirement to control emissions from oil and gas operations in the 8-hour ozone control area. This regulation requires the glycol natural gas dehydrator to reduce uncontrolled actual emissions of VOC by at least 90%.
- Added the CAM requirements as Condition 5.7.

#### CAM Plan Review

The flare is provided with burner control panels that provide constant assurance of a lit flame and re-occurring spark. The burner control panel provides a spark for two seconds every twenty seconds. The spark is audible and the absence of the audible spark can be detected when operators are on-site. The flare is also equipped with a thermal device to ensure that a flame is present. If the thermal device indicates there is no flame detected, the pilot flame may be re-lit by the spark.

The CAM rule specifies that presumptively acceptable monitoring includes monitoring required for any standards that are exempt from CAM (i.e. MACT standards), provided the monitoring is applicable to the control device (40 CFR Part 64 § 64.4(b)(4), as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV). The specific monitoring requirements for a glycol dehydrator equipped with an open flare in the NGTS MACT are found at § 63.1283(d)(3)(i)(C) and state that “For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame”. Therefore, the Division considers that specifying a heat sensing monitoring device to detect the presence of a flame is an appropriate indicator, since the NGTS MACT requires monitoring for the presence of a flame. CAM specifies that for small pollutant specific emission units (i.e. emission units with controlled emissions less than the major source level) that the minimum monitoring frequency for at least some parameters is every 24 hours (40 CFR Part 64 § 64.3(b)(4)(iii) as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV). Therefore, although the heat sensing device continuously monitors the presence of a flame, since the



dehydrator is a small pollutant specific emission unit, the Division considers that a continuous recorder is not necessary to meet the CAM requirements and therefore, daily checks on the presence of a flame are sufficient to meet CAM. Therefore, although the monitoring cannot be considered presumptive CAM, the indicator (presence of a flame) and the monitoring method (heat sensing device) are consistent with the parameters and monitoring method specified in the NGTS MACT and the frequency of monitoring the indicator meets the requirements in 40 CFR Part 64 § 64.3(b)(4)(iii), as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV; therefore the Division considers that the monitoring in the CAM plan meets the CAM requirements. Note that monitoring the pilot light spark is not required under the NGTS MACT but is an additional measure that has been proposed by other sources to prevent flame outages and has been included in the CAM plan for this unit.

#### Section II.6 - Unit P018: Hanover triethylene glycol dehydrator with flare

- This whole section has been restructured to match current formatting and language.
- Condition 6.1 was drafted based on the 7/9/2005 worst-case emission calculations submitted by Kerr McGee. The VOC limit has been reduced from 10.9 TPY to 4.5 TPY. The Division has removed the monthly emission limit since this only applied during the first 12 months of operation and no longer applies. The HAP limits have been reduced to 8 TPY for each individual HAP and 20 TPY for total HAPs. This is consistent with the current Division HAP limit policy. The hourly VOC & HAP emission rate has been updated in Condition 6.1.4 based on the worst-case emission calculations.
- The gas analysis frequency has been drafted to allow for less frequent analysis if BTEX concentrations remain below the requested values (Condition 6.1.2). The previous permit required quarterly analysis.
- The inlet gas pressure and flash tank temperature and pressure no longer require monitoring.
- The monthly gas throughput limit has been removed from Condition 6.2. This limit only applied during the first 12 months of operation.
- The Division removed the requirement to limit the lean glycol flow rate below 9.0 gallons per minute (Condition 6.3 of previous permit). The lean glycol flow rate is already recorded on a daily basis in Condition 6.1. If the average glycol circulation rate of 8.99 gallons per minute is exceeded, a GLYCalc run is required to determine emissions.

- Condition 6.3 was added to record the hours/days of operation for use in any required GLYCalc run.
- Condition 6.6 from the previous permit has been removed. This condition explained how to demonstrate compliance with the 99% flare control efficiency. This condition is not necessary since the CAM plan will be used to determine compliance with the control efficiency.
- Condition 6.10 of the previous permit has been removed. This self-certification requirement from the construction permit is not needed anymore.
- The opacity condition (6.6) has been redrafted to reflect current language for flares.
- Added Condition 6.8 for the requirement to control emissions from oil and gas operations in the 8-hour ozone control area. This regulation requires the glycol natural gas dehydrator to reduce uncontrolled actual emissions of VOC by at least 90%.
- Added the CAM requirements as Condition 6.7.

#### CAM Plan Review

The flare is provided with burner control panels that provide constant assurance of a lit flame and re-occurring spark. The burner control panel provides a spark for two seconds every twenty seconds. The spark is audible and the absence of the audible spark can be detected when operators are on-site. The flare is also equipped with a thermal device to ensure that a flame is present. If the thermal device indicates there is no flame detected, the pilot flame may be re-lit by the spark.

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CFR Part 64 § 64.3(b)(4)(iii) as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV). Therefore, although the heat sensing device continuously monitors the presence of a flame, since the dehydrator is a small pollutant specific emission unit, the Division considers that a continuous recorder is not necessary to meet the CAM requirements and therefore, daily checks on the presence of a flame are sufficient to meet CAM. Therefore, although the monitoring cannot be considered presumptive CAM, the indicator (presence of a flame) and the monitoring method (heat sensing device) are consistent with the parameters and monitoring method specified in the NGTS MACT and the frequency of monitoring the indicator meets the requirements in 40 CFR Part 64 § 64.3(b)(4)(iii), as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV; therefore the Division considers that the monitoring in the CAM plan meets the CAM requirements. Note that monitoring the pilot light spark is not required under the NGTS MACT but is an additional measure that has been proposed by other sources to prevent flame outages and has been included in the CAM plan for this unit.

#### Section II.7 - Unit F001: Fugitive Emissions of VOC from Equipment Leaks

- The equation in Condition 7.1 to calculate VOC emissions was revised to indicate that the weight percent VOC shall be used to calculate emissions. Since the emission factors are in lb/hr, it is appropriate to use weight percent VOC.

#### Section II.8 - Unit T001: Condensate storage tank battery

As discussed previously, with recent revisions to Regulation No. 3 condensate storage tanks are no longer considered insignificant activities if VOC emissions are above the APEN de minimis level. The source submitted an APEN for the condensate storage tank battery at Hudson on January 27, 2003 indicating that uncontrolled VOC emissions are 140 tons/yr. Since VOC emissions are above the APEN de minimis levels, the condensate storage tank battery can no longer be considered an insignificant activity and has been included in Section II of the operating permit.

A revised APEN was submitted for the condensate storage tank battery on April 23, 2004. This was apparently submitted to report the NO<sub>x</sub> and CO combustion emissions. Another APEN was submitted on November 22, 2004 & January 12, 2006 for this tank battery to increase the condensate throughput and emissions due to an increase in liquids production at this site. The application was intended to be processed as a construction permit modification. However, the construction permit was not issued and this modification will be incorporated into the renewal Operating Permit.

**1. Applicable Requirements** - The appropriate applicable requirements are as follows:

- Condensate processing rate shall not exceed 40,000.0 bbls/yr (as requested by the APEN submitted on January 12, 2006).
- VOC emissions shall not exceed 27.4 tons/yr (as requested by the APEN submitted on January 12, 2006).
- NO<sub>x</sub> emissions shall not exceed 2.35 tons/yr and CO emissions shall not exceed 4.68 tons/yr. These are not the emissions requested on the January 12, 2006 APEN. Those emissions were based on the AP-42 emission factors for industrial flares. The Division prefers to use the emission factors published by the Texas Commission of Environmental Quality (TCEQ) and these emission factors and resulting emissions are listed in the permit.
- Reg. 1 opacity requirements for flares (Reg. 1, Section II.A.5).
- Reg. 7 – VOC Emissions from Oil & Gas Operations (Reg. 7, Section XII.A.2).

#### CAM Requirements

The flare is provided with burner control panels that provide constant assurance of a lit flame and re-occurring spark. The burner control panel provides a spark for two seconds every twenty seconds. The spark is audible and the absence of the audible spark can be detected when operators are on-site. The flare is also equipped with a thermal device to ensure that a flame is present. If the thermal device indicates there is no flame detected, the pilot flame may be re-lit by the spark.

The CAM rule specifies that presumptively acceptable monitoring includes monitoring required for any standards that are exempt from CAM (i.e. MACT standards), provided the monitoring is applicable to the control device (40 CFR Part 64 § 64.4(b)(4), as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV). The specific monitoring requirements for a glycol dehydrator equipped with an open flare in the NGTS MACT are found at § 63.1283(d)(3)(i)(C) and state that “For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame”. Therefore, the Division considers that specifying a heat sensing monitoring device to detect the presence of a flame is an appropriate indicator, since the NGTS MACT requires monitoring for the presence of a flame. CAM specifies that for small pollutant specific emission units (i.e. emission units with controlled emissions less than the major source level) that the minimum monitoring frequency for at least some parameters is every 24 hours (40

CFR Part 64 § 64.3(b)(4)(iii) as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV). Therefore, although the heat sensing device continuously monitors the presence of a flame, since the condensate storage tank is a small pollutant specific emission unit, the Division considers that a continuous recorder is not necessary to meet the CAM requirements and therefore, daily checks on the presence of a flame are sufficient to meet CAM. Therefore, although the monitoring cannot be considered presumptive CAM, the indicator (presence of a flame) and the monitoring method (heat sensing device) are consistent with the parameters and monitoring method specified in the NGTS MACT and the frequency of monitoring the indicator meets the requirements in 40 CFR Part 64 § 64.3(b)(4)(iii), as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV; therefore the Division considers that the monitoring in the CAM plan meets the CAM requirements. Note that monitoring the pilot light spark is not required under the NGTS MACT but is an additional measure that has been proposed by other sources to prevent flame outages and has been included in the CAM plan for this unit.

**2. Emission Factors** – The source will be required to use E & P Tanks version 2.0 or higher to estimate emissions from the condensate tank battery. A control efficiency of 95% for the flare may be used in the emission calculations provided the CAM plan requirements have been met. The TCEQ emission factors shall be used to determine combustion emissions.

**3. Monitoring Plan** – The source will be required to record the quantity of condensate processed and calculate emissions monthly. In order to estimate emissions, the source will be required to sample and analyze the condensate (pre-flash) and sales oil annually.

### Section III – Permit Shield

- The citation in the permit shield was corrected. The reference to Part A, Section I.B.43 was changed to Part A, Section I.B.44 and the reference to Part C, Section XIII was changed to Part C, Section XIII.B.

### Section IV – General Conditions

- Added language from the Common Provisions (new condition 3). With this change the reference to “21.d” in Condition 21 (prompt deviation reporting) will be changed to “22.d”, since the general conditions are renumbered with the addition of the Common Provisions.
- The definition of “prompt” has changed and Condition 21 has been updated with the new definition.

- Minor language changes to Condition 22.d have been incorporated.
- The citation in General Condition 17 (open burning) was revised. The open burning requirements are no longer in Reg 1 but are in new Reg 9. In addition, changed the reference in the text from “Reg 1” to “Reg 9”.

#### Appendices

- The table in Appendix F has been cleared of past modifications.
- Added the CAM Plans to Appendix G & H.
- The fuel allocation for engines has been added to Appendix I.
- Appendix B & C have been updated to the current language.